

# RECURSIVE RAY CASTING METHOD AND APPARATUS

## ABSTRACT OF THE INVENTION

A recursive ray casting method and apparatus is described that increases casting and visible object determination efficiency by casting entire bundles of rays relatively large distances and subdividing into smaller bundles and casting distances when within a certain proximity of graphical objects. A bundle caster recursively advances the position of a ray bundle. A proximity tester receives the position and returns a hit signal if the position is proximate to an object. A ray caster recursively advances the position of an individual ray. A collision tester receives the position of the individual ray and returns a hit signal if the ray impinges upon an object. The ray caster and the bundle caster communicate with an occlusion detector to eliminate unnecessary casting of rays and bundles and thereby conduct gated pixelization of graphical objects.

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